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Preliminary Operating and Maintenance Manual

5.56-mm Rifle T 223 and Rifle Bipod

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5.56 mm Rifle T223

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual contains instructions for operation and organizational maintenance of the 5.56 mm. rifle T223.

b. Appendix I contains a list of basic issue items, major items, components of major items, repair parts, tools and equipment applicable to the 5.56 mm. rifle T223.

c. Appendix II contains the maintenance allocation chart for 5.56 mm. rifle T223, listing maintenance and repair operations for authorized maintenance echelons.

d. Appendix III contains an organizational maintenance repair parts and special tool list.

e. This is a preliminary operating and maintenance manual published in conjunction with the Small Arms Weapons Systems (SAWS) program.

2. Maintenance Allocation

a. Operator Maintenance Allocation. The prescribed maintenance to be performed by the operator will apply as reflected in the operator-maintenance (first echelon) of the maintenance allocation chart (app II). In all cases where the nature of the repair, modification, or

adjustment is beyond the scope or facilities of the operator, trained organizational maintenance personnel with suitable tools and equipment may be provided or other instructions issued.

b. Organizational Maintenance Allocation. The prescribed maintenance to be performed by maintenance personnel of the using organization will apply as reflected in the organizational-maintenance (second echelon) of the maintenance allocation chart (app II). In all cases where the nature of the repair, modification, or adjustment is beyond the scope or facilities of the using organization, the supporting ordnance maintenance unit should be informed so that trained personnel with suitable tools and equipment may be provided or other instructions issued.

Section II. DESCRIPTION AND DATA

3. Description

The 5.56 mm. rifle T223 (fig. 1) is a light-weight, air-cooled, split blow-back operated, magazine fed, shoulder weapon, designed primarily for semi-automatic or full automatic fire at the rate of 650-750 rounds per minute. The rifle is chambered for 5.56 mm. cartridge. It is designed to accommodate a 20-round magazine.

Fig. 1 5.56 mm Rifle T223

4. Name and Serial Number

5.56 mm. Rifle T223 Ser. No.

5. Tabulated Data

Weight of basic rifle with empty magazine, less sling	7.9 lb
Weight of rifle, ready to fire fully loaded and with sling attached	8.6 lb
Length of rifle with flash suppressor	36.9 in
Length of barrel	15.7 in
Type of firing	Semi-rigid bolt
Method of actuation	Split blow-back
Cyclic rate	Approx. 650-750 rd per min
Cooling	air
Muzzle velocity	3,150 fps
Magazine capacity	20 rd
Ammunition type	Ball
Cartridge	5.56 mm M 193

CHAPTER 2

OPERATING INSTRUCTIONS

Section 1. SERVICE UPON RECEIPT OF MATERIEL

6. General

a. When a new rifle is first received, it is the responsibility of the officer in charge to determine whether the materiel has been properly prepared for service by the supplying organization and to be sure it is in condition to perform its function.

b. All basic issue items, repair parts, tools, and equipment will be checked with listing in Appendix I.

c. A record will be made of all missing parts, tools, and equipment and of any malfunctions. Corrective action will be initiated as quickly as possible.

7. Services

a. When new rifles are received they are packed in barrier paper, corrosion preventive. They are packed two in a carton, and five cartons in a box.

b. Remove carton from box, and remove the rifle from carton.

c. Clean bore with cleaning patch.

d. A light coat of oil should be applied to all metal parts except the chamber and other parts which come in contact with the ammunition.

e. A bipod with fabric case is provided with each

rifle. The bipod should be cleaned, lightly oiled and inspected to determine that legs lock in the extended position and retract as required.

Section II. CONTROLS

8. General

This section describes, locates, and illustrates the various controls provided for the operation and organizational maintenance of the rifle.

9. Selector

a. The selector (fig. 2) is located on the left side of the receiver below the rear sight. Its function is to regulate the firing of the rifle as a semi-automatic or automatic weapon.

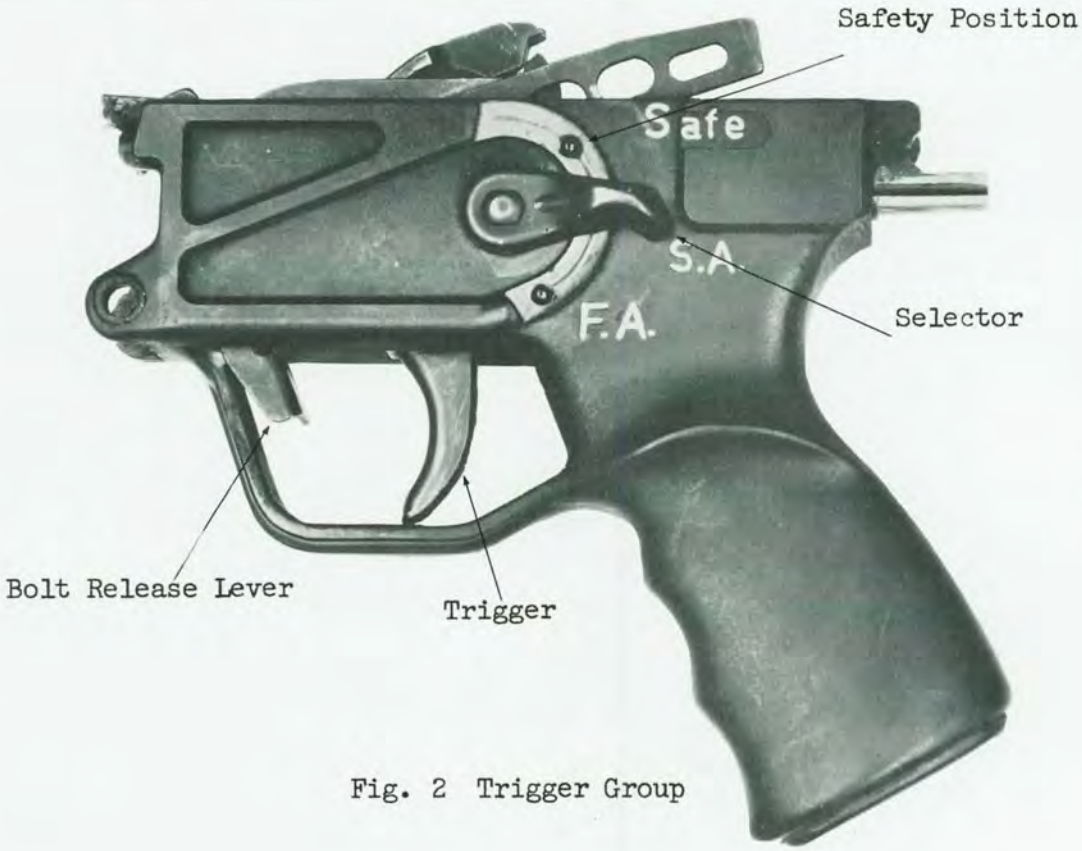

Fig. 2 Trigger Group

b. When the selector is in a horizontal position, at the letters S.A., the rifle will fire semi-automatically. When the selector is in a downward vertical position, at the letters F.A., the rifle will fire automatically.

10. Trigger

a. The trigger (fig. 2) is located inside of the trigger guard and is part of the firing mechanism. Its function is to control the firing of the rifle for both semi-automatic and automatic.

b. In firing the rifle for semi-automatic, squeeze trigger for each round fired.

c. For automatic firing, squeeze trigger and hold.

11. Safety

a. The safety (fig. 2) is located on the left side of the receiver, below the rear sight, and integral with the selector. Its function is to lock trigger, sear, and hammer, preventing firing of rifle.

b. To prevent firing of rifle, the safety is moved to an upward vertical position, at the letter S. When ready to fire, press safety to downward position.

12. Rear Sight Controls

a. A four position rotary rear sight, adjustable for elevation and windage, is located on top of the receiver (fig. 3). The four positions include an open notched auxiliary and three aperture positions.

The aperture positions are numbered and calibrated so position 1 (one) includes ranges from 100 to 200 meters and positions 3 (three) and 4 (four) for 300 and 400 meters respectively.

b. Initial sighting-in adjustments are accomplished with use of a special tool provided with each rifle (see fig. 3).

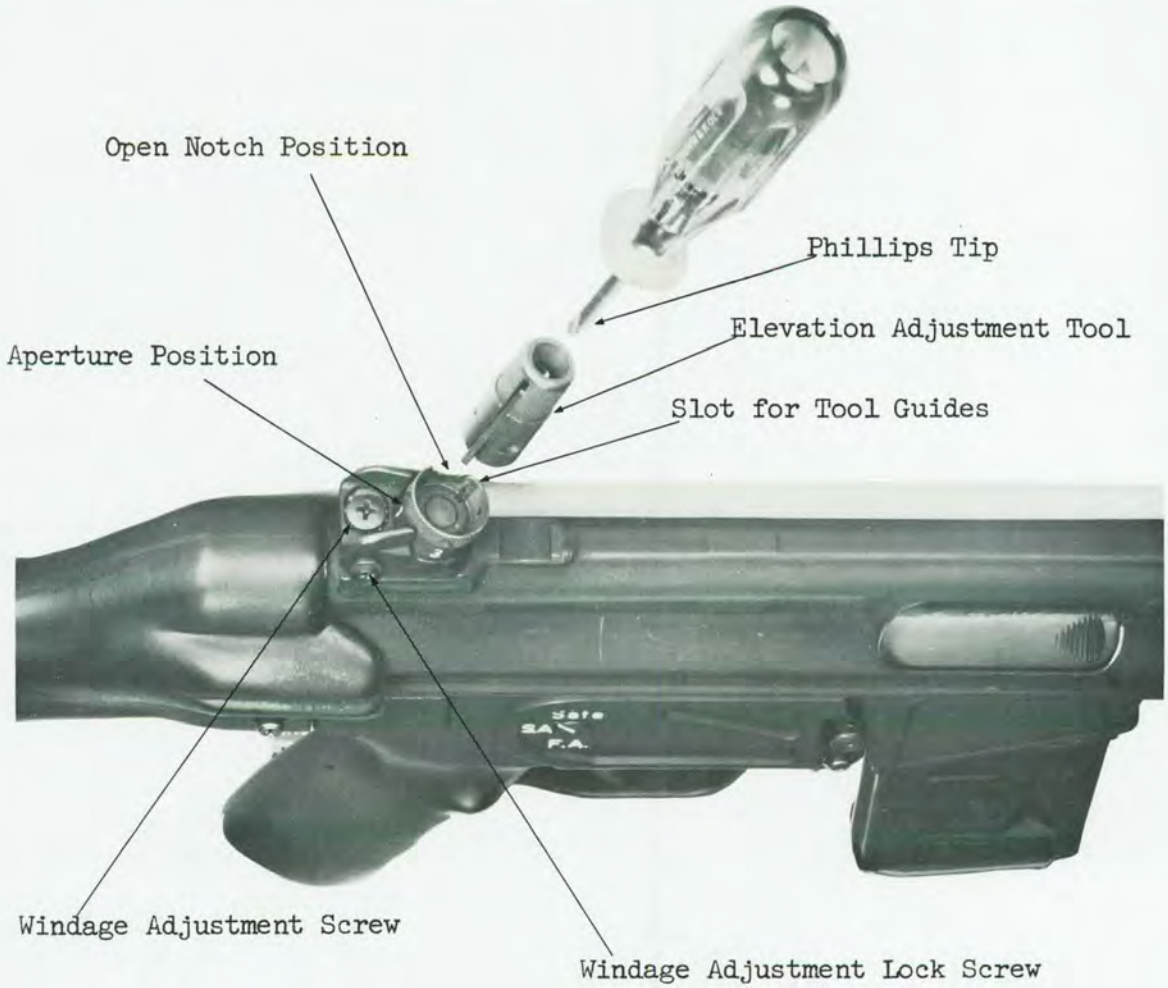

Fig. 3 Sight Adjustments

c. Windage adjustments are made by loosening the Phillips head lock screw on top of the sight. The Phillips head screw on the right side of the sight is now turned clockwise to move sight to the left and counter-clockwise to move sight to the right. Each revolution of the screw moves the point of impact approximately 3.5 inches at 100 meters. The lock screw on top of the sight should be tightened after adjustment.

d. Initial elevation adjustments are made by inserting blunt end of tool into the recessed top of sight (fig. 3), and rotating until spring loaded guides line up in respective slots. With the Phillips tip inserted in top of tool, the body of the sight is rotated counter-clockwise to raise sight and clockwise to lower sight. Each click (1/4 turn) moves the point of impact approximately one inch at 100 meters. Once adjusted for a known distance, the sight can be rotated to the other three relative positions without use of the tool.

13. Operating Rod Handle

a. The operating rod handle (fig. 1) is located on the left hand side of barrel. The rifle can be manually operated by use of this handle.

b. To operate rifle, manually move operating rod handle to rear position and release. This permits the force of the magazine spring to position the top round in path of the bolt after the operating rod has moved the bolt

to its rearward position. As the bolt moves forward, the bottom face of the bolt engages the base of the cartridge, ramming it forward, feeding, and chambering it in the barrel.

14. Bipod

a. The bipod is attached to the rifle by sliding it over the collar, located below the chamber area of the barrel, until the snap lock engages.

b. To remove bipod, release spring loaded snap lock and slide forward off collar.

Section III. OPERATION UNDER USUAL CONDITIONS

15. General

This section contains instructions for the operation of the rifle under conditions of moderate temperatures and humidity. Instructions for operation under unusual conditions are covered in Section IV of this chapter.

16. Preparation for Firing

a. Check the bore to be sure it is free of foreign matter or obstructions.

b. Check ammunition to make certain it is clean and that it is of the proper type and grade.

c. Place the safety in the SAFE position (par. 11).

17. Service Before Firing

Perfcrm the "before firing" operations as indicated

in Table I, operator's preventive-maintenance services.

18. Loading

a. With the selector placed on "Safe," draw the operating rod rearward engaging it in the locking recess of the housing (fig. 4). Insert the loaded magazine into magazine well, front end first. Pull magazine rearward and upward until the magazine catch locks magazine into position. After first allowing the operating rod to snap forward and then positioning the selector, the weapon is ready to fire.

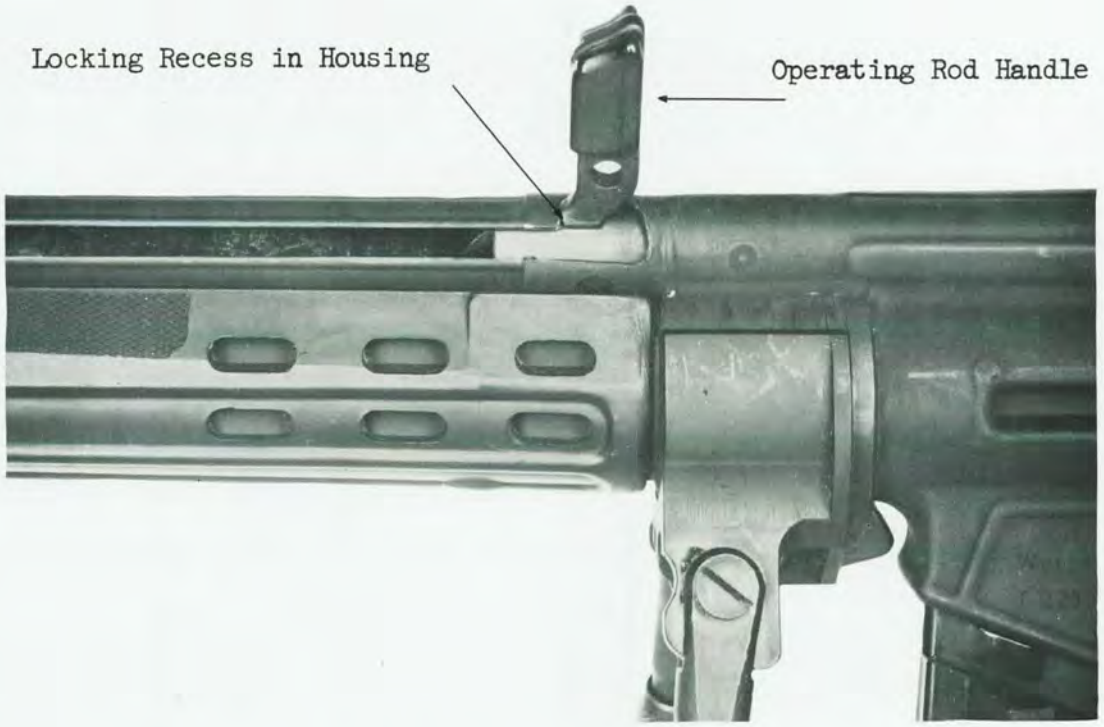

Fig. 4 Operating Rod Assembly

19. Firing

a. Semi-automatic Fire - Push the selector downward to S.A. With each squeeze of the trigger, the rifle will fire a round.

b. Full Automatic Fire - Push the selector downward to F.A. Squeeze trigger and hold on target. The rifle will fire automatically as long as the trigger is squeezed and there is ammunition in the magazine. Release trigger to cease firing.

20. Ruptured Cartridge Case

a. A ruptured cartridge case will result in a portion of the cartridge case remaining in the chamber after the base portion of the cartridge has been extracted and ejected. Under usual conditions the next round picked up by the bolt and chambered (A dummy round should be used whenever possible), will engage in the remaining portion of the ruptured cartridge. The weapon will jam due to the inability of the bolt to lock, and the rifle will not fire. With the selector placed on "SAFE," the bolt is manually returned with the operating rod handle. This will extract and eject the chambered round and the ruptured portion of the cartridge. If the above does not occur, evacuate to Ordnance for further inspection and repair.

21. Misfire, Hangfire, and Cookoff

a. Misfire - A misfire is not dangerous, but since

it cannot be immediately distinguished from a delay in the functioning of the firing mechanism or from a hangfire (b. below), it should be considered as a possible delay in firing until such possibility has been eliminated. A delay in the functioning of the firing mechanism could result from the presence of foreign matter such as sand, grit, frost, ice or oil and grease. These might create a partial mechanical restraint which, after some delay, is overcome as a result of the continued force applied by the spring, and the firing pin striking the primer. In this connection NO round should be left in a hot weapon any longer than the circumstances require because of the possibility of a cookoff (c. below).

b. Hangfire - A hangfire is a delay in the functioning of a propelling charge at the time of firing. The amount of delay is unpredictable but, in most cases, will fall within the range of a split second to several minutes. Thus, a hangfire cannot be distinguished immediately from a misfire, and therein lies the principal danger of assuming that a failure of the weapon to fire is a misfire whereas, in fact, it may prove to be a hangfire.

WARNING: During the prescribed time intervals, the weapon will be kept trained on the target and all personnel will stand clear of the muzzle.

c. Cookoff - A cookoff is a functioning of the round chambered in a very hot weapon due to the heat of the

weapon. If the primer or propelling charge should cookoff, the projectile will be propelled from the weapon with normal velocity even though no attempt was made to fire the primer by actuating the firing mechanism. In such a case, there may be uncertainty as to whether or when the round will fire, and precaution should be observed the same as those prescribed for a hangfire. To prevent a cookoff, a round of ammunition which has been loaded into a very hot weapon should be fired immediately, or removed after 5 seconds and within 10 seconds.

22. Immediate Action Procedures for Removing a Live Round in Case of Failure to Fire.

a. General - After a failure to fire, due to a misfire, the following general precautions, as applicable, will be observed until the round has been removed from the weapon and the cause of failure determined.

1) Keep the weapon trained on the target and see that all personnel are clear of the muzzle.

2) Before retracting the bolt and removing the round, see that personnel, not required for operation, are cleared from vicinity.

3) Make certain the round, removed from the weapon, is kept separate from other rounds until it has been determined whether the round or the firing mechanism was at fault.

If the weapon is determined to be at fault, the round may be reloaded and fired after correcting the cause for failure to fire.

b. Time Intervals - The definite time intervals for waiting, after failure of weapon to fire, are prescribed as follows: Always keep the round in the chamber for 5 seconds from the time a misfire occurs to insure against an explosion outside of the gun in event a hangfire develops. If the barrel is hot, and a misfire stops operation of the gun, wait 5 seconds with the round locked in the chamber to insure against hangfire dangers; then extract the round immediately to prevent cookoff. If the round cannot be extracted within 10 seconds, it must be locked in chamber for at least 5 minutes due to the possibility of a cookoff. Also, in the event the barrel is hot and a misfire occurs when attempting to resume firing after an intentional cessation of firing, the round should remain in the chamber for 5 minutes because of the possibility of a cookoff.

WARNING: Do not retract the bolt when a hangfire or cookoff is suspected. A hangfire will normally occur within 5 seconds from the time the primer is struck and a cookoff after 10 seconds of contact with the chamber in a hot barrel. One hundred and fifty rounds fired in a 2 minute period will heat a barrel hot enough to produce a cookoff.

23. Double Feed

A double feed may occur when a cartridge case of a fired round is not extracted from the chamber and another cartridge is picked up by the bolt and fed into the receiver. This can result from a broken extractor or the extractor flipping off of the base of the cartridge during extraction. Care should be exercised in clearing the rifle. With the selector placed on "SAFE," the bolt is manually returned by the operating rod handle. The magazine is removed (par. 25), allowing all live rounds to be removed.

Releasing the operating rod handle will allow the bolt to close and extractor to engage on the base of the chambered cartridge case. Manually returning the bolt will extract the cartridge case and prepare the rifle for reloading (par. 18).

24. Service During Firing

Perform the "during firing" operations as described in the operations preventative-maintenance services, Table I.

25. Unloading

a. Place the selector in "SAFE" position.

b. Grasp magazine, placing the thumb on the magazine latch, and squeeze the latch, push the magazine forward and downward to disengage it and remove the magazine from the magazine well.

c. Pull the operating rod handle rearward to extract and eject the chambered round. Inspect the chamber, making certain the rifle is clear.

Section IV. OPERATING UNDER UNUSUAL CONDITIONS

26. General Conditions

a. In addition to the normal preventive-maintenance service, special care in cleaning and lubrication must be observed where extremes of temperatures, humidity, and atmospheric conditions are present or anticipated. Proper cleaning, lubrication, storage, and handling of lubricants not only insure operation and functioning, but also guard against excessive wear of the working parts and deterioration of the weapon.

b. See Paragraphs 27-29 for instructions on lubrication under unusual conditions and Table I for preventive-maintenance checks to be made when material is subjected to unusual conditions.

27. Operation in Cold Climates

a. In climates where the temperature is consistently below 0° F., it is necessary to prepare the rifle for cold-weather operation. Generally, extreme cold will cause lubricants to congeal. Therefore the weapon should be thoroughly cleaned of all lubricants or grease, and lubricated with low temperature type lubricating oil.

b. Exercise the various controls through their entire

range, at intervals as required, to aid in keeping them from freezing in place and to reduce the effort required to operate them.

c. When weapon is not in use, and must be stored outside, pay particular attention to protecting it with proper cover. Cover should be securely fastened so that snow, ice, or moisture will be kept from the operating parts.

28. Operation in Hot Climates

a. In hot climates, the film of oil necessary for operation will dissipate quickly. Inspect the rifle, paying particular attention to all hidden surfaces such as bolt and bolt components, where corrosion might occur and not be quickly noticed.

b. Due to perspiration from the hands, after handling weapon, clean, wipe dry, and restore the oil film using special lubricating oil.

c. When operating in hot, wet or dry climates, clean and oil the bore and bolt components of the rifle more frequently than usual. Rapid temperature changes cause a moisture condensation film to form on the uncoated metal, resulting in rust. Immediately, when this moisture film occurs on metal parts of the weapon, wipe briskly until thoroughly dry and coat with special lubricating oil, as required to prevent rusting.

29. Operation Under Sandy or Muddy Conditions

a. Sand. Clean and lubricate the weapon more frequently when operating in sandy areas. Use particular care to keep sand out of mechanisms when carrying out inspecting and lubricating operations. Shield parts from flying sand during disassembly and assembly operations. When operating weapon continuously in sandy areas, remove lubricant from bolt, barrel and receiver, operating rod, and firing mechanism, as they will pick up sand and form an abrasive which will cause rapid wear. With surfaces dry, there is less wear than when coated with lubricant contaminated with sand. Clean and lubricate all exposed parts after completion of continuous usage.

b. Mud. Clean and lubricate rifle as often as possible when operating in areas which are muddy. Exercise particular care and make certain all mud is removed and that mechanism is thoroughly dry before lubricating. Clean and lubricate all exposed parts after use.

CHAPTER 3

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, TOOLS, AND EQUIPMENT

30. General

Repair parts, tools, and equipment are issued to the using organization for operating and maintaining the

rifle. Tools and equipment should not be used for purposes other than prescribed and, when not in use, should be properly stored.

31. Repair Parts

Repair parts are supplied to the using organization for replacement of those parts most likely to become worn, broken, or otherwise unserviceable, providing replacement of these parts is a function of the using organization. Repair parts supplied to the first and second echelons are listed in Appendix I.

32. Common Tools and Equipment

Common tools and equipment having general application to this weapon are authorized by tables of allowance and tables of organization and equipment.

33. Special Tools and Equipment

Tools and equipment for operation and second echelon maintenance repair are listed in Appendix I.

Section II. LUBRICATION

34. General Lubricating Instructions

Usual Conditions. Make certain all metal parts, which come in contact with gases, have been cleaned with rifle bore cleaner and dried thoroughly. Apply a light coat of preservative lubricating oil to the following surfaces:

1) Bolt Head including locking rollers and recesses

2) Bolt Body and locking lever

3) Bolt Ways in Receiver

4) Operating Rod Tube

35. Lubrication Under Unusual Conditions

a. Unusual Conditions. Reduce or increase lubrication intervals as required to compensate for abnormal operation and extreme conditions, such as high or low temperatures, prolonged periods of high-rate operation, continued operation in sand or dust, or exposure to moisture, any one of which may quickly destroy the protective qualities of the lubricant. Lubrication periods may be extended during inactive periods.

b. Changing Grade of Lubricants. Lubricants are prescribed in accordance with temperature ranges. The time to change the grade of lubricants is determined by maintaining a close check on the operation of the rifle during the approach to changeover periods, in accordance with weather forecast data. Ordinarily, it will be necessary to change grade of lubricants only when air temperatures are consistently in the next higher or lower range.

c. Extreme Cold-Weather Lubrication. Apply a light coat of low temperature lubricating oil to the rifle, and exercise frequently during periods of low tempera-

ture to insure proper functioning.

d. Extreme Hot-Weather Lubrication. Special lubricants will ordinarily not be required at extremely high temperatures, as lubricants prescribed for temperatures above 0° F. provide adequate protection. However, more frequent servicing than specified in Tables I and II is necessary because the heat tends to dissipate the lubricants.

e. Lubrication for Humid and Salt Air Conditions. High humidity, moisture, or salt air contaminate lubricants, necessitating more frequent service than specified in Tables I and II because the heat tends to dissipate the lubricants.

f. Before-Immersion Lubrication. Grease and lubricate parts listed in paragraph 34. (1) through (4) before amphibious operation.

g. After-Immersion Lubrication. After immersion, perform the maintenance described in paragraph 52 which covers maintenance operations after immersion and includes special lubrication instructions.

h. Lubrication After Operation Under Sandy or Dusty Conditions.

If firing or prolonged travel has occurred under dusty or sandy conditions, clean and inspect all lubricated surfaces for fouled lubricants. Lubricate as necessary.

Section III. PREVENTIVE-MAINTENANCE SERVICES

36. General

a. Responsibility and Intervals. Preventive-Maintenance services are the responsibility of the using organization. These consist of before-firing, during-firing, daily, and weekly services performed by the operator (Table I), and the scheduled services to be performed at the weekly, bi-monthly, and semi-annual intervals by the armorer of the using organization (Table II). Intervals are based on usual conditions. Reduce or increase intervals for unusual conditions. Intervals during inactive periods may be extended accordingly.

b. Definition of Terms. The general inspection of each item applies also to any supporting member or connection and is generally a check to see whether the item is in good condition, correctly assembled, secure, and not worn.

(1) The inspection for "good condition" is usually an external visual inspection to determine whether the unit is damaged beyond safe or serviceable limits.

(2) The inspection of a unit to see that it is "correctly assembled" is usually an external visual inspection to see if it is in its normal assembled position in

the weapon and functions properly when manually operated.

(3) Inspection of a unit to determine if it is "secure" is usually an external visual examination or a check by wrench or hand for looseness.

(4) By "worn" is meant that the item is approaching unserviceable limits and a point likely to result in failure if the unit is not replaced.

37. Preventive-Maintenance by Operator

The operator(s) is expected to perform the necessary care and cleaning functions, basic preventive-maintenance, and services as outlined in Table I at the specified intervals.

38. General Care and Cleaning

Instructions are as follows:

(1) Immediately after firing, thoroughly clean bore with rifle bore cleaner, making certain that all surfaces, including the rifling are well coated. The bore should be swabbed with a saturated flannel cleaning patch, making certain no trace of burned powder or other foreign substances are left in the bore. Wipe dry and apply a light coat of lubricating oil.

(2) The chamber should be cleaned with a chamber cleaning brush (fig. 5), wiped clean, and oiled lightly. Other metal parts should be cleaned with a dry cloth to remove dampness, dirt, perspiration, and oiled lightly.

(3) Use rifle bore cleaner to clean all parts which have been exposed to powder fouling during firing. Care should be used to wipe parts dry and lubricate where necessary.

Fig. 5 Chamber Cleaning

39. Basic Preventive-Maintenance

The general preventive-maintenance procedures outlined in a through d below will be observed in addition to

those referred to in Table I. Special maintenance of specific components of the rifle is covered, when necessary, in the sections pertaining to the components.

a. Rust, dirt, grit, gummed oil, and water cause rapid deterioration of internal mechanisms and outer uncoated surfaces. Particular care should be taken to keep all bearing surfaces clean and properly lubricated. Remove all traces of rust from uncoated bearing surfaces with CROCUS CLOTH, which is the coarsest abrasive to be used by the using organization for this purpose.

b. Loose parts will be tightened and broken parts will be replaced or repaired.

c. Check equipment for completeness. Replace missing items and turn in for repair all damaged items. Use only tools that are provided and see that they are serviceable. After use, tools must be thoroughly cleaned, coated with a film of oil, and stored.

d. Inspect and service the weapon, as described in paragraph 36, at least every 6 months and after any extended use of the weapon.

40. Specific Procedure for Operator(s)

The item on points to be inspected and serviced by the operators are listed in Table I.

41. Preventive-Maintenance by Organization Maintenance Personnel.

Service by the armorer includes a systematic check to see that all operators preventive-maintenance has been properly performed at the prescribed intervals, and that the rifle is in the best possible operating condition. The services set forth in Table II are to be performed or supervised by the armorer at the designated intervals, in addition to any maintenance required as a result of the checks and services by the operator. The frequency of the preventive-maintenance services prescribed is considered a minimum requirement for operation of the weapon under usual conditions. Under unusual operating conditions, such as extreme temperatures, mud, dust or sand, extremely moist or salty atmosphere, or in rain or snow, it will be necessary to perform the maintenance services more frequently.

TABLE I. Operator Preventive-Maintenance Services

Intervals					Procedure
Before Firing	During Firing	After Firing	Daily	Weekly	
					Usual Conditions
X	-	X	-	-	Rifle-Clean Chamber and bore (Par.38)
		X	-	-	Clean bore and all component parts which come in contact with expelled gases (Par. 38)
				X	Examine bore for powder fouling or corrosion. Note: Examine bore daily if conditions are damp or near sea-coast.
		X	-	-	Wipe outside finished surfaces of rifle and oil lightly (Par. 38)
					Unusual Conditions
					Preventive-maintenance services for usual conditions will apply, with emphasis on servicing by the operator to combat the effects of extreme cold (Par. 27) and extreme heat (Par. 28). The special services described below are required to assure optimum results under unusual conditions.
					Extreme Cold (Par. 27)
X	-	X	-	X	Bore-Clean and lubricate bore (Par.27)
		X	-	X	Lubricate-Lubricate parts sparingly.
				X	Inspect - Inspect flash suppressor for cracks.
					Extreme Heat (Par. 28)
		X	-	X	Clean - Remove moisture from all parts (Par. 28).
X	-	X	-	X	Bore - Clean and lubricate.
X	-	X	-	X	Inspect - For rust, grit, etc.
					Barrel and Receiver Group
X	-	-	X	-	On dusty and sandy terrain, clean but do not oil exposed surfaces.

TABLE II. Operator Preventive-Maintenance Services

Intervals			
Weekly	Bi-monthly (60 days)	Semi-Annually (6 months)	Procedure
			Usual Conditions
X	-	-	Barrel and Receiver Group - Check for unusual wear, erosion, and damage to bore. Check rear sight group for functioning; check operating and assembly and guide for proper fitting.
X	-	-	Stock and Handguard Group - Check for cracks and proper fitting.
X	-	-	Bolt Group - Check for damaged firing pin and function. Check locking rollers, extractor, and ejector for proper functioning. Perform bolt space dimension check.
X	-	-	Firing Mechanism - Check for proper functioning of safety. Magazine catch must hold magazine in rifle.
X	-	-	Lubricate - Check that all items have been properly lubricated.
X	-	-	Equipment - See that equipment and tools are complete, serviceable, and clean.
			Unusual Conditions
			Maintenance operations, as prescribed under usual conditions, will apply under unusual conditions except for extreme cold weather. Intervals are shortened in extreme cold weather.

Section IV. TROUBLESHOOTING

42. Scope

This section contains troubleshooting information and tests for locating and correcting some of the troubles which may develop in the rifle. Each possible malfunction is followed by probable causes and suggested procedures to be followed.

43. Troubleshooting

Table III is intended as a guide in troubleshooting. This table does not cover all possible malfunctions that may occur. Only the more common malfunctions are listed. The tests and corrective actions are governed by the scope of the operator or organizational level of maintenance.

TABLE III. Troubleshooting Guide

Malfunctions	Probable Causes	Corrective Action
Failure to Load	Dirty or Deformed Ammunition	Clean or Replace
	Damaged Magazine Tube	Replace Magazine
	Dirty Magazine	Clean
	Damaged or broken spring	Replace Magazine
	Damaged or broken follower	Replace Magazine
	Loose or damaged floor plate	Replace Magazine
Magazine Inserts with difficulty	Bent or deformed magazine	Replace Magazine
	Excessive dirt in receiver or on magazine	Clean
	Round not seated in magazine	Remove and insert round properly
	Damaged magazine latch	Notify ordnance maintenance
	Magazine latch movement restricted	Clean if necessary
Magazine not Retained in Weapon	Magazine latch damaged or deformed	Notify ordnance maintenance
	Magazine latch spring damaged or deformed	Notify ordnance maintenance
	Magazine damaged or deformed	Replace magazine
	Locking recess in magazine deformed	Replace magazine
	Magazine not fully installed	Remove and install correctly
Failure to feed	Weak or broken magazine spring	Replace magazine
	Damaged or deformed magazine	Replace magazine

TABLE III. Troubleshooting Guide

Malfunctions	Probable Causes	Corrective Action
Failure to Feed	Short Recoil	(See "Short Recoil")
	Short Round	Remove Round
	Dirty Ammunition and/or magazine	Clean as required
	Weak or Broken Recoil Spring	Replace Spring
Bolt Fails to close tightly	Cartridge case holding bolt out of battery	Hold bolt to rear and remove deformed cartridge. Clean ammunition and/or barrel chamber
	Dirty or Rusty Chamber	Clean barrel and chamber
	Extractor does not snap over rim of cartridge base	Clean bolt assembly and extractor recess in breech face of barrel. Replace worn extractor and/or spring assembly.
	Bolt not fully engaged in breech of barrel	Remove burrs or foreign substances restricting bolt movement.
	Weak or broken Recoil Spring	Replace spring
	Insufficient Headspace	Notify ordnance maintenance
Failure to fire	Safety engaged	Release safety
	Bolt not fully forward and locked	(See "Bolt fails to close tightly")
	Defective Ammunition	Follow procedures for misfires, etc.(Par.21)
	Firing pin worn, damaged or movement restricted	Clean bolt as required or replace firing pin.
	Weak or broken hammer spring	Replace spring

TABLE III. Troubleshooting Guide

Malfunctions	Probable Causes	Corrective Action
Short Recoil	Bolt Binding	Clean receiver, notify ordnance maintenance
	Restricted movement of recoil spring	Inspect for interference
	Defective Ammunition	Replace ammunition
	Improper lubrication in cold weather	Clean
Failure to extract	Cartridge seized in chamber	Remove cartridge and clean chamber
	Short recoil	(See "Short Recoil")
	Damaged or deformed extractor	Replace extractor
	Ruptured or separated cartridge	Remove cartridge
Failure to eject	Short recoil	(See "Short Recoil")
	Deformed or frozen ejector lever	Replace Ejector Lever
	Broken extractor	Replace extractor and/-or spring
Failure of bolt to remain rearward after last round is fired	Damaged or deformed magazine	Replace magazine
	Damaged or deformed bolt stop lever	Notify ordnance maintenance
	Bolt stop lever movement restricted	Clean bolt stop lever assembly
	Short recoil	(See "Short Recoil")

Section V. MAINTENANCE OF RIFLE

44. Disassembly

a. Disassembly of the rifle T223 can be accomplished without the use of tools. Using a cartridge or bayonet, all major assemblies can be disassembled for purposes of cleaning, inspection and repair. Fig. 6 illustrates the field disassembly of the major component groups in their relative position in the rifle.

b. Field disassembly, as illustrated, can be accomplished by hand removal of three snap pins located (1) at the base of the forward portion of the butt stock, (2) immediately in front of the trigger guard, and (3) through the forward part of the hand guard below the front sight. The bipod is removed as indicated in Par.14.

Fig. 6 Major Components Diagram

c. Removal of the snap pin located in the forward portion of the butt stock will allow removal to the bolt assembly and access to the receiver, chamber and barrel for cleaning purposes.

d. The magazine is released as described in Par. 25.

e. Reassembly is accomplished by reversing above.

45. Bolt Assembly

a. Bolt Space Measurement. As indicated in Table II of the Preventive-Maintenance Services by Armorer Par. 44, A weekly bolt space dimension check is required. This inspection must be performed with the rifle completely assembled, except for removal of the magazine, and the trigger in the uncocked or released position. The dimension being inspected represents the distance between the bolt head and the bolt body and should be within .1

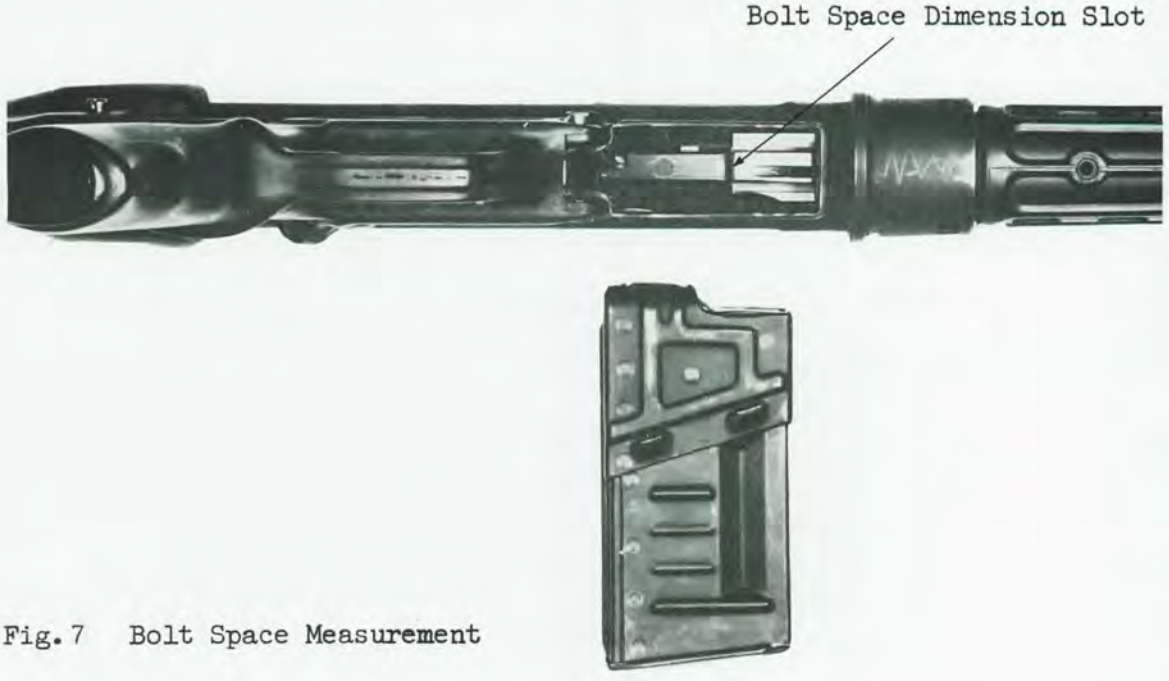

Fig. 7 Bolt Space Measurement

mm to .5 mm or .004 to .020. A tool, calibrated in millimeters, is provided with each rifle; however, any standard feeler gauge is satisfactory. The dimension is measured through the magazine well as illustrated in Fig. 7. Care should be exercised that the rifle is completely assembled and uncocked prior to measurement.

b. The bolt assembly (Fig. 8) consists of bolt head, bolt body, recoil spring assembly, firing pin, firing pin spring, locking piece, locking roller assembly, and extractor assembly. The bolt is removed by detaching the butt stock and sliding the assembly out the rear of the receiver. Disassembly is accomplished by rotating the bolt head counter-clockwise (looking at the bolt face) one quarter turn and separating. This will allow access to the firing pin, firing pin spring and locking piece for cleaning, inspection and repair or replacement of these components.

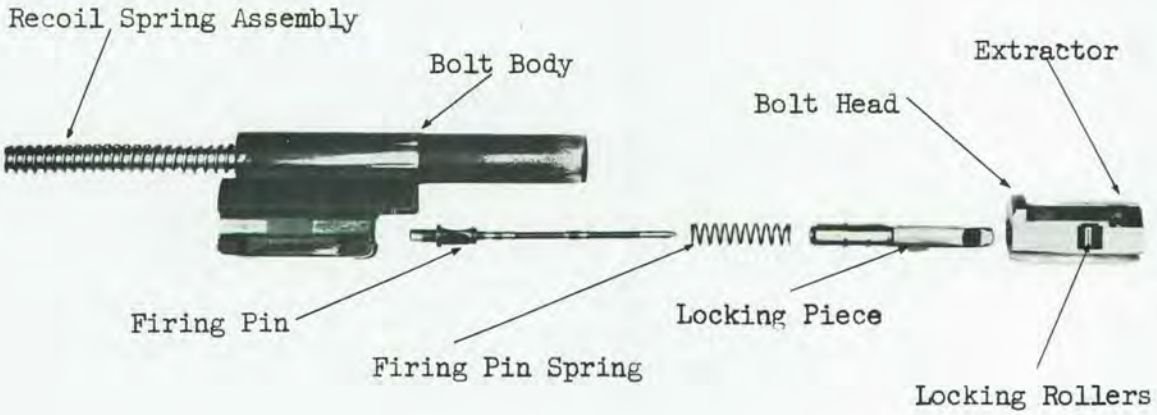

Fig. 8 Bolt Assembly

c. Assembly of the bolt components is the reverse of disassembly. After inserting the firing pin and spring, the locking piece is aligned with the bolt body, compressed and rotated one half turn clockwise. The bolt head is aligned with and inserted over the locking piece, allowing about 1/4 inch between bolt head and bolt body, and rotated one quarter turn clockwise. This will secure the entire bolt assembly, and allow the locking rollers to be retracted into the bolt head for insertion into the receiver. If the locking rollers cannot be retracted into the bolt head, disassembly and reassembly allowing maximum space (approx. 1/4 inch) between the bolt head and the bolt body is recommended.

46. Butt Stock and Hand Guard Assembly

Disassembly of the butt stock and hand guard assembly (see Fig. 6) is accomplished as indicated in Par. 44. The butt stock assembly is equipped with a recoil buffer assembly and sling loop assembly which are integral with the stock.

47. Barrel and Receiver Group

The barrel and receiver group (see Fig. 6) are integral components press fitted and pinned. Disassembly of the rifle as indicated in Par. 44 will provide the barrel and receiver group for cleaning and inspection purposes. Care should be exercised in cleaning the receiver so that the recesses provided for the rollers are not damaged in

any way. Similarly for maximum efficiency and trouble-free operation, care should be exercised in cleaning the gas grooves in the chamber of the barrel. The chamber cleaning brush provided should always be used, and cleaning should be thorough.

48. Firing Mechanism

The firing mechanism (Fig. 9) consists of the selector, bolt stop release, ejector, disconnector, hammer, bolt stop lever and trigger. Removal of this assembly from

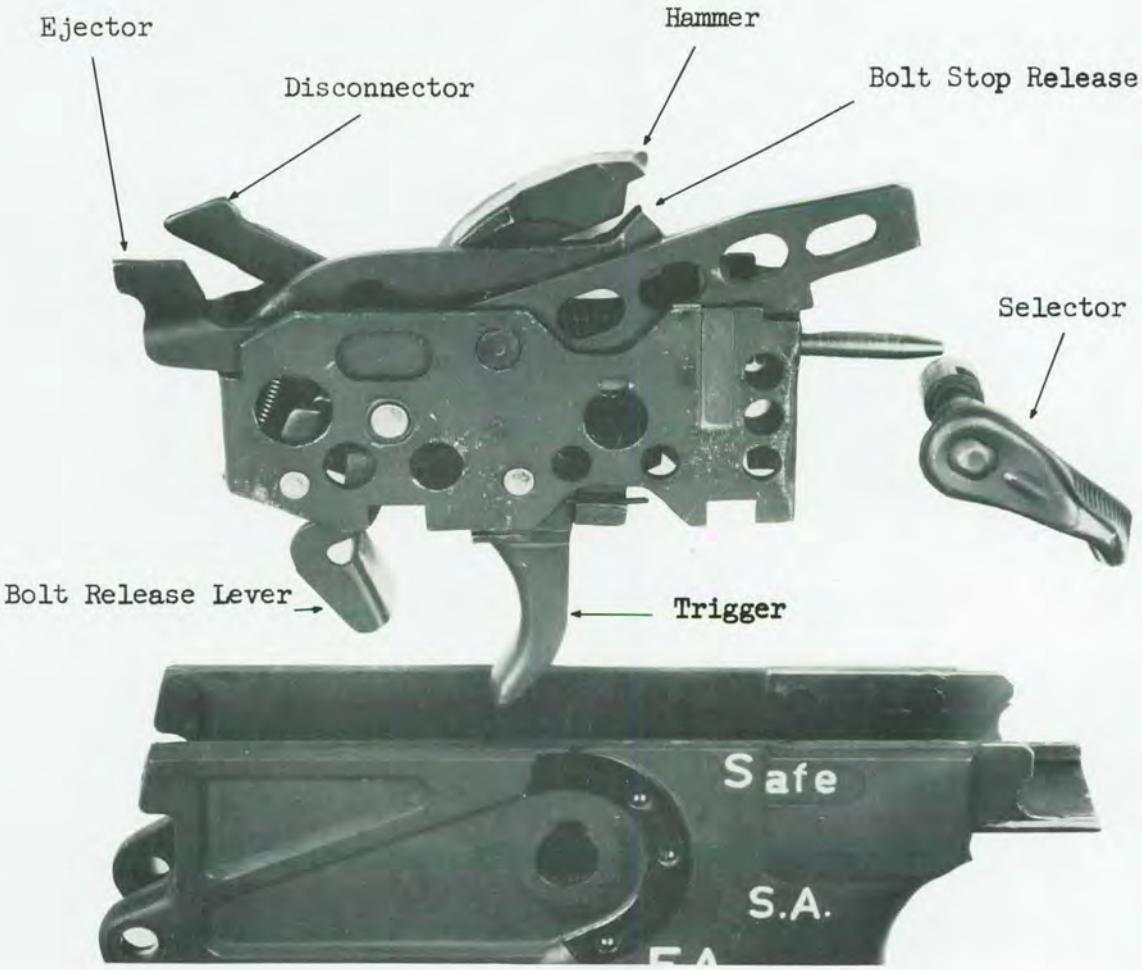

Fig. 9 Firing Mechanism

the rifle is accomplished by removal of the two snap pins, one in the forward portion of the butt stock and the other just forward of the trigger guard. The firing mechanism housing is removed by turning the selector one quarter turn counter-clockwise past the safety position and removing. Manipulation of the trigger and bolt release lever will permit removal of the housing. Further disassembly of the individual components is accomplished by pressing out the three pins exposed after removal of the housing. Care should be exercised in removing the various components in order that reassembly can be accomplished by reversing the order of disassembly. Disassembly of the individual components of the firing mechanism for inspection or repair should be done by second echelon maintenance personnel.

49. Magazine Assembly

The magazine assembly consists of the tube, base, spring and follower. The magazine is removed from the rifle by squeezing the magazine release lever (Fig. 1). The magazine should be cleaned in order to remove excess dirt, oil, and grease. To install magazine in rifle, insert magazine into well at bottom of receiver. Make certain latch clicks and magazine is firmly locked in rifle.

Section VI. MAINTENANCE OF BIPOD

50. The bipod provided with the rifle requires only normal maintenance and cleaning. Maintenance at intervals similar to the other exposed metal components of the rifle should be sufficient. Care should be exercised to avoid getting sand, dirt and grit in the retracting mechanism of the bipod legs.

CHAPTER 4

MAINTENANCE UNDER UNUSUAL CONDITIONS

51. Extreme Cold-Weather Maintenance

Refer to Paragraph 27 for information on extreme cold-weather maintenance.

52. Extreme Hot-Weather Maintenance

a. Corrosive or deteriorating action on all parts of the rifle may occur and be accelerated in areas having hot damp climates. Evidence will appear in the form of rust on metal surfaces and mildew on the sling.

b. Protect uncoated exposed metal surfaces with general purpose lubricating oil.

c. Make frequent inspections of inactive weapons. Remove corrosion from exterior surfaces with Crocus Cloth and apply a protective coating of oil.

53. Maintenance After Immersion

a. General. Immersion of any type will result in

water seepage into bolt and trigger groups, receiver and operating rod assembly. It is advisable, therefore, that the service outlined in (b) below be accomplished on all weapons which have been immersed or completely submerged in water, especially in salt water, and that precautions outlined in (1) through (3) below be taken as soon as practicable to halt deterioration and avoid damage to the weapon.

(1) After submersion in salt water, wash in clear water, to remove corrosive salts.

(2) Perform a complete lubrication service (Par. 34).

(3) Assemblies which require disassembly for proper lubrication must be disassembled, dried, and lubricated as soon as the situation permits.

b. Cleaning and lubrication. Drain or wipe dry all trapped moisture. Clean all exposed parts and coat with a film of lubricating oil.

CHAPTER 5

DEMOLITION OF RIFLE TO PREVENT ENEMY USE

54. General

Destruction of the 5.56 mm Rifle T223, when subject to capture or abandonment in the combat zone, will be under-

taken by the using arm only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army Commander.

55. Method of Destruction - If destruction to prevent enemy use is resorted to, the rifle must be so badly damaged that it cannot be restored to usable condition in the combat zone either by repair or cannibalization.

a. Method No. 1 - by Mechanical Means. Using an ax, pick mattock, sledge, or other heavy implement, destroy the rifle by smashing the receiver assembly, front and rear sights, trigger and trigger guard, magazine, stock, and controls. Also bend the barrel of the rifle and cut the sling into several pieces.

b. Method No. 2 - by Burning

(1) Place the rifle on a suitable pile of combustible material. Pour gasoline or oil over the rifle and the combustible material. Ignite and take cover. A hot fire is required to render the rifle useless.

(2) If a welding or cutting torch is available, burn through the barrel and receiver assembly. Destroy the stock and sling as described in (a) above.

c. Method No. 3 - by Disposal. Bury the rifle in a suitable hole or dump it into a stream.

APPENDIX I

Basic Issue Items, Major Items, Components of Major Items, Repair Parts and Equipment.

1. Preface

a. This Appendix provides a listing of the Basic Issue Items, Major Items, Components of Major Items, Repair Parts, Tools and Equipment required for operation and maintenance of the 5.56 mm Rifle T223.

2. Basic Issue Items

a. Rifle T223 with 20 Round Magazine

b. 5 Spare 20 Round Magazines

c. Bipod with Case

d. Bayonet with Case

e. Webbed Sling

f. Preliminary Operating and Maintenance Manual

3. Major Items and Components - Rifle T223

a. Stock and Handguard Group

Recoil Buffer Assembly

Butt and Front Sling Loops

b. Barrel and Receiver Group

Operating Rod Assembly

Rear Sight Assembly

Front Sight

Flash Suppressor

Magazine Release Assembly

Bolt Stop Actuator Assembly

c. Bolt Assembly

Bolt Head

Bolt Body

Firing Pin Assembly

Extractor Assembly

Locking Lever Assembly

Locking Roller Assembly

d. Firing Mechanism

Trigger Assembly

Ejector

Hammer

Disconnector

Bolt Stop Assembly

Selector

Safety

e. Magazine Assembly

f. Bipod Assembly

4. Repair Parts

a. Extractor

b. Extractor Spring

c. Firing Pin

d. Firing Pin Spring

e. Locking Rollers

f. Locking Lever

g. Locking Lever Spring

h. Holding Plate for Locking Rollers

i. Clamping Sleeve

j. Takedown Locking Pin Small

k. Takedown Locking Pin Large

l. Hammer

m. Release Lever

n. Bolt Space Measurement Tool

o. Ejector Lever

5. Tools and Equipment

a. Chamber Cleaning Rod

b. Chamber Brush

c. Sight Adjustment Tool

d. Bolt Space Measurement Tool

APPENDIX II

MAINTENANCE ALLOCATION CHART

1. Purpose To allocate specific maintenance operations to the proper echelon on the basis of time, tools, and skills normally available to these echelons. The maintenance function, for purposes of this manual, will be performed by either (1) First Echelon - operator - or (2) Second Echelon - armorer - personnel.

MAINTENANCE ALLOCATION CHART

Group No.	Functional Group	Maintenance Function										Tools & Equipment
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild	
1.	Magazine Assembly	1	1	2	2	2	2	1	1	2	2	2	
2.	Firing Mechanism	1	1	2	2	2	2	1	1	2	2	2	
3.	Stock and Hand-guard Group	1	1	2	2	2	2	1	1	2	2	2	
4.	Operating Rod Assembly	1	1	2	2	2	2	2	2	2	2	2	
5.	Bolt Assembly	1	1	2	2	2	2	1	1	2	2	2	Bolt Space Dimension Tool
6.	Barrel and Receiver Group	1	1	2	2	2	2	2	2	2	2	2	Sight Adjusting Tool Chamber Cleaning Rod and Brush

APPENDIX III

ORGANIZATIONAL MAINTENANCE REPAIR PARTS
AND
SPECIAL TOOL LIST

Section I.

Preface This section includes a preliminary list of repair parts and special tools required for the maintenance of the 5.56 mm Rifle T223. The list is broken down by component groups and assemblies, and includes the specific spare parts listed in Appendix I and provided with the rifle.

Section II.

Repair Parts for Rifle and Bipod

1) Magazine Assembly
   - Magazine Tube
   - Spring
   - Follower
   - Floor Plate

2) Firing Mechanism
   - Grip Assembly
   - Trigger Guard Snap Pin
   - Selector Lever
   - Trigger Assembly Complete
   - Ejector Pin
   - Ejector Pin Retaining Ring
   - Ejector Lever

Ejector Spring

Trigger

Trigger Spring

Trigger and Catch Pins

Sear

Sear Pin

Sear Spring

Sear Roll Pin

Hammer

Hammer Pin

Hammer Shank

Hammer Spring

Disconnector Lever

Disconnector Catch

Catch Spring

Bolt Stop Lever

Bolt Stop Spring

3) Butt Stock and Hand Guard Assembly

Butt Stock Assembly

Butt Stock Snap Pin

Buffer Assembly

Sling Loop Assembly

Hand Guard

Hand Guard Snap Pin

4) Barrel and Receiver Group

Receiver

Barrel

Barrel Pin

Barrel Snap Ring

Operating Rod Assembly

Operating Rod Tube

Operating Rod Handle

Operating Rod Spring

Operating Rod Pin

Operating Rod Stop Pin

Rear Sight Assembly

Rear Sight Cylinder

Rear Sight Support

Catch Pins

Catch Pin Springs

Adjusting Screw

Indexing Ball

Indexing Ball Spring

Locking Screw and Washer

Spring Washer

Front Sight Assembly

Front Sight Holder

Front Sight Post

Roll Pin

Eye Bolt

Bayonet Adapter

Adapter Plunger

Adapter Spring

Set Screw

Flash Suppressor Assembly

Flash Suppressor Retaining Ring

Magazine Release Lever

Magazine Release Bushing

Magazine Release Spring

Magazine Catch

Magazine Catch Cam

Magazine Catch Lock

Roll Pin

Bolt Stop Actuator

Actuator Spring

Actuator Spring Cap

5) Bolt Assembly

Bolt Body

Locking Lever

Locking Lever Spring

Locking Lever Pin

Bolt Head

Extractor

Extractor Spring

Locking Rollers

Locking Roller Holding Plate

Roll Pin

Locking Piece

Firing Pin

Firing Pin Spring

6) Bipod

Bipod Collar

Locking Latch

Latch Spring

Latch Pin

Bipod Legs

Leg Screws

Lock Nuts

Retracting Sleeve

Sleeve Pins

Retracting Rollers

Roller Holders

Tools and Equipment

Bolt Space Dimension Tool

Sight Adjusting Tool

Chamber Brush

Chamber Cleaning Rod